Claims pending in the application

1. A flip-chip light-emitting device, comprising:

a transparent substrate;

a semiconductor stacked structure arranged over a main surface of said transparent substrate wherein said stacked structure comprises an n-type GaN-based III-V Group compound semiconductor layer adjacent to said main surface and a p-type GaN-based III-V Group compound semiconductor layer adjacent to said n-type semiconductor layer;

a first electrode being in electrical contact with said n-type semiconductor layer; and

a second electrode being in electrical contact with said p-type semiconductor layer;

wherein said second electrode has good reflectivity of light and covers most of the outer surface of said p-type semiconductor layer.

2. The device of Claim 1 wherein said stacked structure further comprises an active layer placed between said n-type semiconductor layer and said p-type semiconductor layer.

3. The device of Claims 1 or 2 further comprising an insulating layer at least coated on the side surface of the stacked structure, a portion of said first electrode and a portion of said second electrode.

4. The device of Claims 1 or 2 further comprising a base which has a first and a second conductive portions respectively connected to said first and second electrodes.

5. The device of Claim 4 wherein said base can be a conductive lead frame, a glass lead frame, a circuit board or a thin-film circuit.

6. The device of Claims 1 or 2 wherein said second electrode is a multi-layer structure comprising a light-transmitting conductive layer and a layer of aluminum (AL) or silver (Ag).

7. The device of Claims 1 or 2 wherein said second electrode is a multi-layer structure of nickel/gold/titanium/ aluminum (Ni/Au/Ti/Al), Indium-Tin Oxide/aluminum (ITO/Al) or Indium-Tin Oxide/silver (ITO/Ag).

8. A flip-chip light-emitting device, comprising:

a transparent substrate;

a semiconductor stacked structure arranged over a main surface of said transparent substrate wherein said stacked structure comprises an p-type GaN-based III-V group compound semiconductor layer adjacent to said main surface and a n-type GaN-based III-V Group compound semiconductor layer adjacent to said p-type semiconductor layer;

a first electrode being in electrical contact with said n-type semiconductor layer; and

a second electrode being in electrical contact with said p-type semiconductor layer;

wherein said first electrode has good reflectivity of light and covers most of the outer surface of said n-type semiconductor layer.

9. The device of Claim 8 wherein said stacked structure further comprises an active layer placed between said n-type semiconductor layer said the p-type semiconductor layer.

10. The device of Claims 8 or 9 further comprising an insulating layer at least coated on the side surface of the stacked structure, a portion of said first electrode and a portion of said second electrode.

11. The device of Claims 8 or 9 further comprising a base which has a first and a second conductive portions respectively connected to said first and second electrodes.

12. The device of Claim 11 wherein said base can be a conductive lead frame, a glass lead frame, a circuit board or a thin-film circuit.

13. The device of Claims 8 or 9 wherein said second electrode is a multi-layer structure

comprising a light-transmitting conductive layer and a layer of aluminum (Al) or silver (Ag).

14. The device of Claims 8 or 9 wherein said second electrode is a multi-layer structure of titanium/aluminum (Ti/Al), titanium/silver (Ti/Ag), Indium-Tin Oxide/aluminum (ITO/Al) or Indium-Tin Oxide/silver (ITO/Ag).